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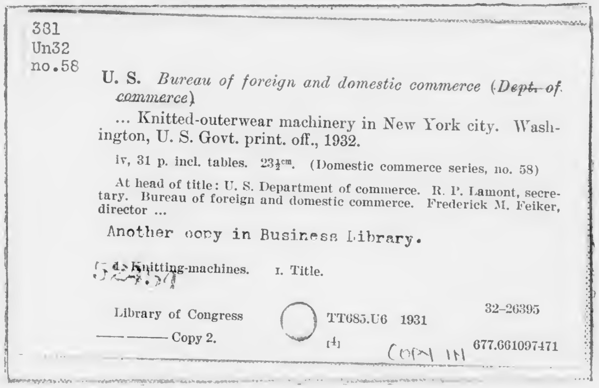

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KNITTED-OUTERWEAR MACHINERY IN NEW YORK CITY

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Domestic Commerce Series—No. 58

KNITTED-OUTERWEAR MACHINERY IN NEW YORK CITY

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FOREWORD

The report presented herewith is the third of a series that was made at the request of the National Knitted Outerwear Association, with a view to improving the equipment policy of the industry. On the basis of facts thus discovered, it is felt that some of the evils experienced in that industry arise from lack of a definite equipment policy, that excess factory capacity has been allowed to accumulate, that possibly too much obsolete equipment is in operation, and perhaps the accounting policies employed in this general connection need revision and deserve uniform treatment. Of the two reports previously published, one covered machinery in Philadelphia and the other in Cleveland. This third report deals with the situation in the New York-Brooklyn area.

For reasons mentioned in the report, it is somewhat difficult to state definitely the extent to which the industry suffers from an excess of factory capacity. It is true that there are many machines that never run, a great many machines that run less than half time, and certain machines which are employed not only full time but overtime. At first glance, it would appear that some plants are better managed than others in this respect, but the situation becomes exceedingly complicated, because some establishments cater to a trade that demands expensive garments and a high-quality line, where style is very important and the number of garments produced of a given size or pattern is relatively small. In contrast to this, other establishments make long runs of standardized garments, frequently manufacturing to a price. In addition, both lines of trade are strongly influenced by seasonal factors and other problems, that militate against continuous runs at full capacity.

The subject of obsolescence, on careful investigation, has similarly been found to be far more complicated than was at first anticipated. Certain well-informed men in the industry declare that there has been practically no progress in machine design for 20 or 30 years, while others, presumably equally sincere and equally well informed, are disposed to take the opposite stand. The bureau's investigators have satisfied themselves that there have been many developments of importance, but many were of such a character that they could be added to the old machine, with the result that in some instances the matter of obsolescence becomes a discussion regarding the operation of an attachment.

All of these matters lead to the much bigger subject of the desirability of a better equipment policy for the knitted outerwear industry. The material contained in this report, and its two predecessors, shows clearly that a better policy is needed, the nature of which, the reasons therefor, and the methods to be pursued are found in the report itself.

The study was conducted by R. G. Matthews, assistant chief of the industrial machinery division. Assistance in the field work was given by Ellery B. Gordon, secretary of the National Knitted Outerwear Association, and a committee from the industry headed by Bernard Steuer, as well as Jos. M. Marrone, commercial agent of the bureau's New York district office. The facts were obtained by personal visits by Messrs. Marrone and Matthews to all the plants included in the survey, and the report was prepared by the latter after the field work had been completed.

Frederick M. Feiker, *Director,*
Bureau of Foreign and Domestic Commerce.

November, 1931.

KNITTED-OUTERWEAR MACHINERY IN NEW YORK CITY

GENERAL SUMMARY OF FINDINGS

The knitted-outerwear industry, through its national association, requested the Department of Commerce to make a study of the equipment in that industry, with the thought that equipment policies of the individuals in the industry, as well as other factors, were at the base of some of the troubles experienced in the past few years.

In summarizing the information collected, there were found a number of factors which should be carefully considered by the association and its members. The tabular material presented shows the need in all three areas covered (Cleveland, Philadelphia, and New York) for a definite equipment policy. The reasons for this are lack of standardization of sizes, number of machines not operating or operating only at very low production capacity, and style of garments produced.

In considering the data collected, together with what cost information could be obtained, it was found none of the companies approached has ever arranged to set up suitable reserves for either style or mechanical obsolescence of their equipment. This question of a reserve is vitally necessary to the well-being and health of the industry, if it is intended to establish a system making possible to discard the old machines when they have become obsolete through style or mechanical changes and to replace them with new equipment. With the information at hand it was not possible to determine definite rates for style and mechanical obsolescence. Studies of this question by the association, with the assistance of the data submitted and with information which can be contributed by knitting machine manufacturers, should result in definite findings on which charges for reserves could be recommended to the industry.

Lately, considerable thought and discussion has been given to the subject of obsolescence by engineeers and accountants who realize the need of taking this item into consideration in connection with manufacturing costs. Two companies have gone so far as to prepare formulas covering this item. One of the large engineering societies has also worked out a very comprehensive accounting formula covering this subject, and some others are seriously considering the possibilities of a general formula. It is believed that the National Knitted Outerwear Association can do a useful piece of work for the industry by a careful study of the various factors involved, with data from the machinery manufacturers as to average rate and numer of changes, the periods over which they have been effective, and whether the old machines are still usable and can be modernized by purchase of new attachments.

Tabulation of data collected brought to light the question of secondhand equipment. It can not be said that all secondhand equipment is not suitable for manufacturing purposes, but it does have a tendency to produce uneconomic competition when allowed to get into the hands of certain manufacturers. The association might give thought to secondhand equipment, as no doubt many of the ills of the industry are due to lack of foresight in both purchase and sale of this equipment. Although a machine may seem cheap in price, this is not always the case, especially if the amount and quality of work produced will not compare favorably with the work turned out on corresponding new equipment. There are many cases where good secondhand machinery and equipment can be extremely valuable and useful to a plant. For the most part, however, no manufacturer is desirous of getting rid of his old equipment until he has taken the best out of it or finds that there is new equipment on the market producing more profitably. Therefore, as a general rule, the purchaser of the secondhand machine is immediately at a disadvantage in competing with the manufacturer who sold the equipment. A manufacturer could probably profit more from scrapping secondhand machinery than from placing it on the market and permitting uneconomic competition to develop.

Standardization is another point which seems to deserve careful consideration by the industry. The plants visited have a large number of odd-size machines on which idleness accumulates, suggesting there is evidently very little standardization in the industry in any of the three areas surveyed. This is proved by the fact that in most cases these odd-size machines are relatively few in number. Examination of the amount of time they are producing brings up the question as to why they were ever purchased. It emphasizes the evident lack of foresight in the development of a proper equipment policy in the industry.

From the accounting side there are a number of other evils that are self-evident from an examination of the accounts in the industry. The following are very necessary adjuncts for successful operation: (*a*) Uniform cost accounting system, (*b*) wastage allowance, (*c*) a charge for interest on capital, both fixed and working, and (*d*) a study of depreciation rates. All of these points need careful consideration and when once definitely settled would contribute greatly toward stabilization of the industry.

Among many trade associations there is lack of uniformity in the accounting methods employed by the several manufacturers in reaching their costs, which has a serious demoralizing influence upon the prices eventually quoted. This confuses the price structure and undermines profits. On the other hand, certain manufacturing groups, by developing uniform methods, at least arrive at a consistent price structure, even though some of the accounting practice involved may fall short of the theoretical ideal. Uniformity is found advantageous because it serves to bring the entire industry onto an acceptable basis. Obviously such a cost system should include all of the usual items, but experience gained in making this survey led to the conclusion that in arriving at costs more attention should be given to allowances for wastage, interest on capital, depreciation and obsolescence, and certain marketing costs than appears to have been the practice heretofore. It is not necessary to set up an intricate or involved system. In fact, the simpler the form the better the results and the better the chances for adoption by all manufacturers in the group.

Many trade associations are now working in this direction and are developing better and better information regarding equipment policies appropriate to their particular industry. One group of machinery manufacturers has developed a very complete system of cost accounting which is being adopted by many. Those who have used it have found it extremely helpful in enabling them to reach more accurate costs and in assisting the management to conduct the affairs of the factory on a more efficient basis. Such steps lead to the development of a definite industry policy and the establishment of data that mean the same thing to the managers of different shops when they come up for discussion. On the other hand, lack of uniformity prevents the group from reaching desired results, a situation that undermines the operations of the group and eventually may cause trouble or even disaster.

The experience of other groups indicates that it is a comparatively easy matter to develop and adopt a uniform cost plan which can be carried forward without greatly increased expense and frequently at less expense and at the same time provide the management with more complete information regarding the financial and managerial aspects of the business.

Without comparing the knitted outerwear industry with others involved in more elaborate manufacturing problems, it can be said that in making this survey the writer gathered the impression that much of the machinery was susceptible of improvement. Devices are available which can be utilized to advantage without entailing serious additional cost. It is suggested that the managers of plants give this aspect of their equipment policy very careful consideration. Perhaps in some cases reserves are not available for the rehabilitation of old equipment or the purchase of new. Such a situation suggests that the management is not adequately protecting the interests of the stockholders by not maintaining the original investment in factory equipment. It is easy for the management to liquidate the assets of an enterprise unconsciously in this way.

The records of several of the manufacturers proved to be unusually interesting, for they revealed clearly that in plants where adequate costs systems had been developed and where all items were covered in estimates, where depreciation had been recognized and equipment reserves set up, and where the other aspects of the business were covered by carefully developed policies, these concerns found themselves in a much better position in time of depression than their less methodical competitors. When the time came to meet highly competitive conditions they were able so to manage as not merely to keep their plants running but to show a profit when other establishments "drifted into the red."

ANALYSIS OF MACHINERY DATA

EXCESS CAPACITY

It is extremely difficult to make a comparison of the percentage of time operated in the three areas studied, as these percentages were calculated for different years; consequently what would apply to Philadelphia in 1928, or Cleveland in 1929, is scarcely comparable to the conditions found in New York in 1930.

It is surprising to note that in the New York area in 1930 the greater proportion of the equipment was operating approximately 50 per cent of the time. In the years when the Philadelphia or Cleveland studies were conducted the percentage of operating time was undoubtedly higher.

In Philadelphia the percentage of operating time was found to be 58; circular machines operated 50 per cent and flat machines 66 per cent of the time. The year 1928, on which these figures were based, was a much better year for the industry than 1930, for which the New York figures were taken.

Cleveland in 1929 showed a total operating percentage of 60 per cent, which was based on a good year for the industry. The figures for the Cleveland area were made up as follows: 42 per cent for the circular machines; 52 per cent for the flat machines; and 86 per cent for the Raschel machines. In Cleveland the largest proportion of the equipment is of the circular type. It is evident that the Raschel cloth was in great demand at the time the figures were taken, thus explaining the high-operating experience for these machines.

The New York area showed the following percentages of operating time: Flat machines, hand 29 per cent, power 52 per cent; links-and-links machines, hand 35 per cent, power 84 per cent; circular machines, power, 51 per cent; Raschel machines, power, 42 per cent; average, 49 per cent.

It will be noted that while the hand-operated links-and-links machines were not used to any great extent, the power-operated equipment was running almost full time. For the flat machines this is not altogether true, as the flat-power machines did not run the same proportion of time as did the links-and-links. The circular machines in certain shops where operation was efficient were running on nearly continuous production. In these shops there was not the wide variety of sizes of machines as was found in some of the plants where operating time was extremely low.

As a further help in trying to determine some basis on which to gage the probability of excess equipment, a computation was made for the more important sizes in the New York area, namely, 16, 18, 20, and 30 inch machines. It was found that of the 16-inch machines, 67 per cent were operated more than 50 per cent of the time; of the 18-inch machines, 62 per cent; of the 20-inch machines, 55 per cent; and of the 30-inch machines, 57 per cent; while the 17-inch machines were operated only 49 per cent and the majority of other sizes less than 50 per cent of the time.

If it were possible to analyze operations in the three areas over a period of two or three years of normal business, it would, no doubt, lead to better knowledge regarding the extent of the excess capacity.

There is uneconomic competition in the industry, but whether this results from excess capacity or simply from a curtailment of buying power or from unsound merchandising can not be proved, as the facts collected do not give a definite basis of study. In order to determine excess capacity accurately it would be necessary to make a complete survey of all knitting machines in the United States and to compare accurate production records with normal consumption. Certainly there are many machines that have passed their usefulness and numerous machines of different sizes that are operating only a small percentage of the time. The manufacturers would, no doubt, find that they could get along without replacements if these machines were scrapped and eliminated from the market. In this respect it is also probable that there is a fair percentage of equipment in the industry that is excess capacity because of style or mechanical obsolescence.

NEW AND SECONDHAND EQUIPMENT

The question of new and secondhand equipment ties in very closely with the problems of excess capacity. In the first place, many manufacturers install a secondhand machine merely because they consider it a bargain, without having a real need for it at the time of purchase but looking to the future for its eventual use. The records show that many of the secondhand machines purchased have been idle or practically so during the year. This, no doubt, has been caused by lack of business for these machines, but it would be interesting to have a record of the total operating time of the secondhand machines in all areas. Of course, in certain plants where the management has been careful in the purchases of such equipment secondhand machines are operating efficiently and up to a standard comparable with new equipment. In these cases the secondhand machines were purchased because of a definite need to make certain articles for the market. There was a feeling in many instances that the articles might not become staple products, so that an investment in a secondhand machine was more profitable than an investment in new equipment.

COMPARISON OF NEW AND SECONDHAND MACHINES IN NEW YORK, PHILADELPHIA, AND CLEVELAND

Type of machine	New York	Philadelphia	Cleveland	Total
Circular:				
New	506	641	1,064	2,211
Secondhand	309	284	318	911
Unknown	64	228	48	340
Flat:				
New	676	168	168	1,012
Secondhand	262	141	139	542
Unknown	136	142	46	324
Raschel:				
New	41		86	127
Secondhand	12		100	112
Unknown			80	80
Links and links:				
New	69			69
Secondhand	53			53
Unknown	11			11
Kettenstuhl:				
New			7	7
Secondhand			8	8
Crochet:				
New	2			2
Secondhand	4			4

A comparison of total new and secondhand equipment in the three areas shows for circular machines 64 per cent new and 26.3 per cent secondhand, while the remaining of 9.7 per cent may be either new or secondhand. The New York area does not make as favorable showing for circular equipment as do the Philadelphia and Cleveland areas, 34.2 per cent of its equipment being secondhand and 6.9 per cent undetermined.

For the flat equipment the total for the three areas shows 53.9 per cent new and 28.8 per cent secondhand, with 17.3 per cent unknown. New York shows 63 per cent new, 24.4 per cent secondhand, and only 12.6 per cent unknown, while in the other two areas the proportion of new, secondhand, and unknown flat equipment is almost equal.

For Raschel equipment, while New York has only 22.6 per cent secondhand and the remainder (77.4 per cent) new equipment, Cleveland has only 32.3 per cent new and 37.6 per cent secondhand, with 30.1 per cent unknown. This reduces the total Raschel machines for the two areas to the following figures: New, 39.8 per cent; secondhand, 35.2 per cent; unknown, 25 per cent.

Links-and-links machines did not appear in the two earlier surveys; consequently the figures for only New York can be considered, which show 51.8 per cent new, 40 per cent secondhand, and 8.2 per cent unknown. Kettenstuhl machines appeared only in Cleveland and figures show 46.7 per cent new and 53.3 per cent secondhand. For the crochet machines in New York the relation was 33.3 per cent new and 66.7 per cent secondhand.

This makes the following percentage totals for the three areas, covering all types of machines: New York, 60.3 per cent new, 30 per cent secondhand, 9.7 per cent unknown; Philadelphia, 46.4 per cent new, 27.8 per cent secondhand, 25.8 per cent unknown; and Cleveland, 50.3 per cent new, 38.1 per cent secondhand, 11.6 per cent unknown.

On the basis of this tabulation, New York has more new machines than either of the other two areas; it also has more secondhand equipment than Philadelphia, but slightly less than Cleveland. However, there were not as many unknown machines in the New York area as in the other two. As to whether this proves anything, it is hard to say, but it does point out the fact that there is and has been a great deal of secondhand equipment on the market, evidently at cheap prices, and again bringing very pointedly to the fore the question as to whether it is better to sell or scrap secondhand equipment. Certainly this might be one of the major considerations of the industry, and a well-planned and thought-out policy can be of material benefit, provided everyone will cooperate.

If the majority of the secondhand machines in the New York area had been disposed of, especially those not operating a reasonable percentage of the time, it is certain it would have materially increased the average percentage of operating time of the remainder of the equipment, implying more economical production.

AGE OF MACHINES

Age has a decided bearing on the question of excess capacity and the usefulness of equipment. It was found that of the links-and-links power machines approximately 37 per cent were over 10 years old and 17 per cent were less than 10 years old. For the remainder the dates of purchase were unknown.

Of the links-and-links hand-operated machines, 24 per cent were over 10 years of age and 32 per cent less than 10 years of age, while dates of purchase were unknown for 44 per cent.

Of the flat power-operated machines, 25 per cent were over 10 years old, 46 per cent less than 10 years old, and the age of 31 per cent was unknown. Flat hand-operated machines were 47 per cent over 10 years old, while 31 per cent were less than 10 years old and 22 per cent unknown.

Of the circular machines, 22 per cent were over 10 years old and 59 per cent less than 10 years old, while for 19 per cent the ages were unknown.

Of Raschel machines, 19 per cent were over 10 years old, 72 per cent under 10 years old, and 9 per cent unknown.

Although there is no doubt that many of the machines over 10 years old are still useful and able to operate efficiently, there are many which could be scrapped and still not materially curtail production in the plants surveyed. Some of these old machines have been kept up-to-date with new improvements and adjustments and are probably as efficient as the newer equipment. There are many more, however, that have not been modernized and could be discarded or scrapped without any harm to the industry; rather, the scrapping of these old machines in many cases would be for the eventual betterment of the industry.

The age of equipment was brought out strongly in the two previous surveys by ratings of the committee. Age, however, does not play as prominent a part in the equipment as might be supposed. Some plants visited had nothing but old equipment fully modernized and were operating machines efficiently and making a profit for their owners. This was due, no doubt, to good management and the modernization of the plant. The cost of this modernization, upkeep, and repairs are factors to be considered. Often it is cheaper to scrap the old equipment than to attempt to modernize it. These data have a bearing on the situation and should be considered by manufacturers, especially the proper depreciation rates to be charged yearly, as well as the obsolescence and the necessity of setting up a reserve for new equipment. Unfortunately, definite data on the different types of machines were not available in order to arrive at a correct average for depreciation or obsolescence. The association, with assistance from the knitting machinery manufacturers, might be able to make suggested rates for both of these items and thus materially assist in reviving the industry and placing it on a better footing, if the knitting manufacturers will maintain accurate cost records covering maintenance and repairs.

RANGE OF FEEDS AND SIZES

From a study of the table in the appendix covering sizes and feeds, it appears that there are a large number of machines in the odd-size class that are hardly operated at all. Many of these machines could probably be dispensed with profitably by the manufacturer and more room thus given in the plant to operate those sizes of equipment which are used a major portion of the time. The elimination of a number of the seldom-used sizes of machines would materially reduce the production capacity in the industry as a whole, but would give the industry a better opportunity for standardizing a few sizes of equipment.

It is certain, from the variety trend of sizes and feeds found, that the industry lacks a definite equipment policy. In fact, in most of the plants the majority of these odd sizes are not operating a sufficient proportion of the time to make them really a profitable investment. It is possible that when these machines were bought the plants had in mind a real need for them, but the survey shows that for the most part the need has passed and they are now really excess idle capacity in the industry. Of course, it is realized that no generalization can be made as to machine sizes in the various plants. Plants which have been successful are, however, standardizing to a great extent their equipment and eliminating the seldom-used sizes of machines, as they have found it more profitable to concentrate on regular sizes. The same is true of practically every industry where there is a need for standardization, and most manufacturers are finding that it pays to maintain standard equipment, and their capacity and production is made much greater by doing so.

Circular equipment in the New York area embraced two hundred and seven 16-inch machines, ninety-nine 18-inch, fifty-three 30-inch, and fifty-six 20-inch; in Philadelphia the largest proportion of circular machines were in the following sizes: Ninety-eight 3-inch, ninety-six 16-inch, eighty-one 30-inch, sixty-eight 20-inch, and sixty-two 14-inch; and in Cleveland there were one hundred and ninety-five 7-inch, one hundred and eighteen 6-inch, ninety-one 20-inch, eighty-six 18-inch, sixty-eight 12-inch, and sixty-six 16-inch machines. In the 16 and 18 inch sizes, the New York area has the largest proportion, but has fewer 20-inch machines than the other two areas. In the 30-inch machines, Philadelphia shows a preponderance of this size over New York, while Cleveland has relatively few. It is interesting to note Cleveland's large amount of 7 and 6 inch equipment, while New York and Philadelphia have very few machines in either of these sizes. On the other hand, Philadelphia has the largest amount of its equipment in the 3-inch class, while the other two areas have relatively few machines in this size. The preponderance of 6 and 7 inch machines in Cleveland is because this city has been the principal market for toques and headwear, while Philadelphia's many 3-inch machines have been utilized for making trimmings for sport coats. This section is the largest producer of sport coats in the country. New York, on the other hand, primarily manufactures sweaters and knitted sports wear, which will explain the preponderance of 16, 18, and 30 inch machines.

The range of feeds in the New York area varied almost as widely as the sizes. In the 16-inch equipment they ran from 2 to 16 feeds; 18-inch, from 2 to 12 feeds; 20-inch, from 3 to 12 feeds; and 30-inch machines, from 4 to 30 feeds; the 30-inch size being the only ones having as high as 30 feeds. A table in the appendix shows the number of machines and feeds for each size, and a comparison of feeds with those in other districts.

Flat equipment in New York was represented by one hundred and thirty-six 16-inch machines, one hundred and twelve 44-inch, one hundred and four 24-inch, seventy-four 40-inch, and sixty-four 32-inch machines, against Philadelphia's forty-three 32-inch width, thirty-eight 20-inch, thirty-two 18-inch, and twenty-seven 24-inch, and Cleveland's sixty-six 24-inch width, thirty-two 10-inch, twenty-eight 20-inch, twenty-four 32-inch, and twenty-four 18-inch widths. Here again there is a great variety of widths of machines and in many instances only a few to a size. This brings up the same question as the preceding paragraph regarding a better standardization of equipment in the industry.

The range of yarn changes was from 1 to 8, although the largest proportion of the equipment had 4 yarn changes, with 3 and 2 yarn changes next in popuarity.

Raschel machines in New York were about evenly divided in sizes from 84 to 96 inches, the largest number being in the 89-inch width. On the other hand, Cleveland had 92.4 per cent of its Raschel machines in the 90-inch width.

Links-and-links machines showed 48 per cent in the 44-inch width, with 10 per cent in the 48-inch width, other sizes running considerably less. The greater proportion of the machines had 4 yarn changes, with 3 and 2 yarn changes, in the order named, next in importance. Yarn changes on these machines ranged from 2 to 6, a few machines having 12 yarn changes.

As there were only six crochet machines, these are not discussed in the text, but are shown in the tables in the appendix.

TYPES OF GARMENTS PRODUCED

Although the New York area makes garments similar to those produced in Philadelphia and Cleveland—that is, bathing suits, sweaters, etc.—the proportion of circular to flat machines is the reverse of what was found in the other two areas. This in a way is rather surprising, as the Philadelphia area makes primarily novelties and high-quality knitted outerwear, while Cleveland makes staple products, principally sweaters. The large use of circular machines in the Philadelphia area for bathing suits and knitted outerwear novelties adds further proof that the circular machines can be used as satisfactorily as the flat for quality garments. There seems to be no question, so far as could be determined, that for standard work the circular machines generally can produce more goods at lower costs than the flat machines. As already stated, for certain types of work there can be no argument as to the efficiency of the flat machines, but for general work the consensus of the trade and the cost figures collected would indicate the higher efficiency of the circular equipment. There is this exceedingly important fact to consider, that for changing of styles, the flat machines, according to the majority of knitters, are more adaptable than the circular equipment. Since change of styles is an important factor in the industry, perhaps the New York area's preponderance of flat equipment is logical and in the end more economical for its production.

In the plants around New York, most of the manufacturers were not using their equipment for one particular type of garment, and it was, therefore, impossible to set up any tabulations similar to those for Philadelphia or Cleveland. The general production in New York consisted of sweaters, shaker and plain; sport wear; ladies' and misses' coats and suits; children's and infants' wear; bathing suits, jersey and ribbed cloth; bouclé and some Raschel cloth. It would be impossible to allocate production by machine to the various types of garments with any degree of accuracy; therefore no table was compiled.

COMPARISON OF MACHINES IN PHILADELPHIA, CLEVELAND, AND NEW YORK

As of interest in connection with this study, it is pointed out that the figures of the industry in Cleveland indicate a much higher degree of concentration of machines than in either the Philadelphia or New York areas. This, of course, may be explained by the fact that the Cleveland area has been producing staple articles largely on a price basis, while in the New York and the Philadelphia areas there are a large number of manufacturers making novelties.

The total number of plants shown for the New York area is somewhat misleading, as seven of them refused to submit reports and two of this number are rather large companies. If all of the plants called on had reported, the total number of machines would probably be nearly 2,700 instead of 2,145 as shown, making the average number of machines per plant 57 instead of 46, as given in the following table.

A general breakdown of the statistics covering the machines in the three areas is given for comparative purposes and shows a striking preponderance of flat over circular machines in the New York area, compared with the other two areas, where the circular machines predominate. Although it is not possible in this report to bring out the facts by individual plants, in going through the records it is noticeable that the majority of the flat machines are in the smaller plants, while the larger plants have mostly circular machines. The New York area is made up largely of small plants, and in this respect is similar to Philadelphia, while in Cleveland the production is concentrated in larger units.

NUMBER AND KIND OF MACHINES IN NEW YORK, PHILADELPHIA, AND CLEVELAND

Area	Circular	Flat	Links and links	Raschel	Kettenstuhl	Crochet	Total	Plants	Machines per plant
New York	879	1,074	133	53	--------	6	2,145	47	46
Philadelphia	1,153	451	--------	--------	--------	--------	1,604	32	50
Cleveland	1,430	353	--------	266	15	--------	2,064	15	138

DEVELOPMENT OF COST INFORMATION

The following schedule of items was developed for obtaining operating costs in the industry:

Type and construction of machine: Flat, links and links, Raschel or circular; hand or power.
Average cost per dozen garments.
Kinds of yarn used.
Direct labor costs: Day or weekly wage rates.
Indirect labor: Foremen, repair men, supervisors, inspectors, etc.; weekly wages.
Rent: Dollar value; area occupied by the machine.
Power: Cost and amount; steam and electricity.
Machinery repair costs per year.
General supplies costs: Brooms, towels, soap; other factory equipment.
Office and administrative expenses: Salaries; insurance, fire and workmen's compensation, etc.
Interest on plant and equipment.
Interest on stock on hand or in process of manufacture.
Inventory of raw materials and semifinished goods.
Depreciation of buildings and equipment: Per cent and value.
Packing materials cost.
Wastage allowed on yarn and seconds.
Credit for salvage materials.
Special equipment costs.
Number of hours per week of operation.
Plant production capacity.
Original cost of the machine.
Present book value.
Present secondhand value.
Replacement cost.

It was impossible to obtain answers to all questions from any of the concerns. Some had sufficient data upon which to base some conclusions and show actual facts of value to the association and its members for setting up future policies toward the purchase of new equipment. Very few of the concerns had their overhead expenses broken down to show the different items under this heading. Moreover, most of the concerns had no records of machinery repairs or their cost, and no data were available on the original cost of machines, and in many cases even the present book value was not obtainable.

OVERHEAD

The majority of concerns figured overhead—rent, machinery repairs, indirect labor, purchased power, and general supplies—as a percentage of the direct labor and material costs. This amount varied from 10 to 100 per cent of the direct labor costs. Probably the accurate figure would be between 50 and 100 per cent, as it is hardly likely even in a small shop that 10 per cent would be sufficient for overhead. It seems advisable to stress the question of overhead, as it is a very important factor, and large losses can be sustained through improper or inaccurate figures covering actual overhead charges. It is suggested, for the future benefit of the industry, that a definite system be set up in a simplified form by the association to assist individual manufacturers in accurately figuring their overhead costs.

INTEREST ON CAPITAL, FIXED AND WORKING

The investigation revealed that most of the concerns visited had not considered interest on capital of sufficient importance to justify a separate item in their accounts or to include it in estimateing costs.

Experience in other industries, and consideration given to the matter in connection with this industry, suggests that interest on capital is more important than has been recognized. Every plant has money invested in buildings, machinery, and other similar equipment, which is the fixed capital of the enterprise. Similarly, each firm has working capital invested in raw materials, goods in process, or finished products, and it will be found that in certain instances large sums are tied up in this manner for 60 or 90 days, or perhaps longer. Interest on the sums represented by such inventories will frequently be found to represent a substantial figure, which, whether actually paid out or not, is certainly one of the costs of doing business and one that should be calculated in estimating the cost of a product.

The plant should also be maintained in as good condition as when first established, or somewhere in the accounts should be a reserve that would permit management to put the equipment into such condition. If this is not done there is a possibility that management is liquidating the assets of the enterprise unconsciously, and a day will come when this situation will prove unpleasant.

Not only should management be expected to keep the property in a condition equal to its original condition, but there should be sufficient progressiveness in the enterprise to enable it to keep up with the progress of the industry. The sweater manufacturer who to-day is a leader in his line should so manage his affairs that 10 years from now the enterprise will still be a leader; otherwise management has been guilty of doing the stockholders a disservice.

A further interesting complication arises from the changes in the purchasing power of money. A knitting machine to-day costs about twice as much as in 1914. If a manufacturer took over a knitting property in 1914 that cost, say $10,000, and if in his accounts he has set up a reserve of $10,000 for the replacement of equipment, to-day he would probably find that he could buy only half as many machines of the specified type as were originally taken over with the property. In other words, depreciation, obsolescence, and current money values should be so covered and included in estimates of the cost of manufacture as to make it possible to recover the replacement value of items represented by both fixed and working capital.

It may be thought that such a discussion is involved, that the writer is splitting hairs, but general experience indicates that these matters are important. Obsolescence, for example, is an insidious thing that can easily lead to serious consequences unless carefully provided for. The matter of maintaining accounts on the basis of replacement value is similarly important, and it is suggested that these matters be given careful consideration for the good of the industry.

INTEREST ON VALUE OF INVENTORY

Interest on the value of inventory does not seem to have been taken into consideration by most of the manufacturers, except in a general way. It is extremely important, as the amount of money

invested in raw materials and semifinished products in any manufacturing establishment is large; therefore, the interest on this investment should certainly be considered carefully as a charge in any estimate of the cost of production. This is especially true where it is necessary to carry stocks of yarn or finished materials on the shelves for two, three, or more months. If the interest on this money be figured carefully, many knitters will be surprised at the total amount.

ALLOWANCES FOR WASTAGE AND LOSSES

There is a wide diversity of opinion as to the actual wastage and what should be salvaged, also the method of salvaging. As to the latter most concerns take all their cuttings and waste and throw them into a box without any attempt at sorting. Then they sell this material for whatever price they can obtain. In general, there was a fairly unanimous opinion that it would be too costly and difficult to sort the yarn and the higher price obtained by sorting would not compensate for the labor involved. In Cleveland it has been found profitable to sort the waste into certain types and grades, as the higher prices obtained for the waste compensated to a great extent the losses in material for cutting, etc. Cleveland concerns said that the actual difference in cost of sorting from the old method is very small, while the price received for the waste is much higher than they were formerly able to obtain.

When the question of wastage was brought up, no two concerns agreed on the actual amount involved in the manufacture of any knitted product. Figures ran anywhere from no allowance for wastage to 20 per cent. Waste might be higher than the figures given, depending on the type and size of machines used and the garment manufactured. In one mill it was found on close examination of all the various wastes that almost 15 per cent of the yarn was lost per garment. On the other hand, some of this could be salvaged and sold at a small price. Very few concerns are figuring in their calculations any allowance for cutting, trimmings, etc., although the wastage probably makes an important difference in the actual figures of profit and loss. These wastes from a general examination of the situation, are evidently unavoidable, owing to the enormous amount of cutting and trimming necessary on most garments.

DEPRECIATION

The rate of depreciation was not uniform among factories examined. One concern charged depreciation only when it had a good year and then 5 to 10 per cent. Another would charge 5 per cent annually and others 10 per cent, and some charged as high as 15 per cent annually. Perhaps the higher rate of depreciation is as nearly accurate for high-production shops as the lower rates are for the small plants. Unfortunately, however, there are no statistics on the actual useful life of the machines. The machine manufacturers make no radical changes in design or improvement of their machines, but small changes have occurred almost yearly.

It has been found possible, especially on the circular machines, to add more feeds, increasing considerably the production of the equipment. This implies that the older equipment with the fewer number of feeds may not be entirely practicable in the larger shops with a high rate of production, but the old equipment might be very valuable and useful to the shop not working on a high-production basis.

In discussing with various manufacturers the time it would take for a knitting machine to become worn out, there seemed to be a wide diversity of opinion. Some figured five years was the actual life of a machine; that is, as long as it would knit satisfactorily at a profitable rate of production and turn out high-class quality garments. Others gave the period as 10 years, and still others figured 20 years. As regards the actual life of a machine, it is no doubt possible to run a machine for 20 years, and possibly still produce knitted goods which are satisfactory, but the interests of the industry and conservative management imply shorter terms.

The speed of production and the quality of the knit goods are essential points to be considered in replacing old machinery. Here again comes the same question of a proper set-up of a reserve to take care of depreciation and obsolescence for the replacement of machines. If proper reserve accounts are not set up for both these items, will it be possible to take advantage of new equipment which may be brought out by the machine manufacturers for more economical operation at lower costs? Will it be necessary to carry on with some old machines and have competitors with more modern and up-to-date equipment able to sell at a lower cost, owing to a definite equipment policy and adequate reserves for the purchase of new machinery?

It can not be too strongly stressed in any machine equipment policy that depreciation and obsolescence reserve are vitally necessary for the well-being and maintenance of the industry on a healthy basis. These reserves should not be used merely as a bookkeeping entry for tax purposes. The depreciation reserve should be used for maintaining and improving the equipment to keep it in first-class order, while the obsolescence reserve should be set aside and used for the replacement of old machines.

SCRAPPING OLD EQUIPMENT

The question of scrapping old equipment, particularly whether it should be sold or scrapped, is an important one. The possibilities for argument on this subject are almost unlimited. Does the manufacturer save more in reality by scrapping his equipment and losing $200 or $300 which might be obtained by selling it? In general, secondhand equipment does not sell much higher than the price of junk or scrap iron. Following this line of thought, it would pay nearly as well to salvage the parts that could be used on equipment remaining in the plant and dispose of the parts which can not be used to the junk man for scrap.

If the plant has other machines of similar kind and type, the savings realized through salvage of the parts usable for repairs and the scrap-iron price of the remainder would not doubt compensate for the secondhand value and lessen greatly the trouble caused by trying to sell the equipment at what is felt to be a more attractive price. Storage space is usually required in the interval between the removal of the old equipment from the floor and its disposal. This is not always available, and sometimes great inconvenience is caused by attempting to make room for old equipment until sold. It is problematical, if the equipment is sold, whether the price obtained will be sufficient to offset the junk price plus the repair value of parts and the possible waste of valuable space.

COSTS OF OPERATION

One of the most interesting phases of this study was the actual cost of operation, which naturally varied with the type of machine. It did show a rather direct relationship between the cost of links-and-links, flat, and circular machines, and it is surprising that in many cases, although factories were different and not making the same products, there was a very direct relationship between the cost of production by the different types of equipment. The comparison between the links-and-links and the flat machines showed that the former type would produce at about 10 per cent less efficiently than the latter. This applied to hand and power equipment alike. In a comparison of the flat and circular machines it was evident that the circular machine would produce at between 40 and 50 per cent less cost than the flat machine.

The product from the circular machines is not altogether comparable with that of the flat machines, and the latter's stitch is considered the better for quality work, but many concerns are finding they can use circular equipment and produce an excellent garment. With the larger number of feeds possible on the circular machine, their production can be increased with little or no sacrifice in quality. The ratio of production per dozen garments between the circular and flat machines had remained practically the same, regardless of type of garment, depending largely upon the number of feeds. Production on the circular and links-and-links machines varied over a rather wide range on comparable garments, running to about five garments on a circular machine to one produced on a flat machine. On the other hand, the production on the links-and-links machine would probably run about 5 for circular to 1¼ on links-and-links as against the average production given above for the flat and circular machines on comparable garments. There are those in the knitting industry who do not think the circular equipment as efficient as the flat. This is no doubt true for certain kinds of work, and the figures submitted were used for general staple garments rather than for any specialties which might be manufactured.

It is realized generalizations in the knit-goods industry are extremely difficult to make and the statements made may not be true in every plant. There are many factors which can be applied in each case and should be given careful consideration.

CONCLUSIONS

A general summary of the situation in the three sections covered shows very conclusively that in order to make any concrete suggestions of help to the knitting industry a survey should cover all plants and that records should be kept more meticulously. If this were done, definite results could no doubt be obtained on style and mechanical obsolescence. It would also give a clear picture and accurate information as to the degree of excess capacity in the industry and how vital a factor it may actually be. Data presented herein suggest that these points are probably of greater importance than has been appreciated heretofore.

The definite needs of the industry as revealed by the survey are summed up in the following paragraphs.

1. *Uniform cost system.*—This should include definite charges and accounts set up for:

(*a*) Fixed interest rate charged on capital investment.

(*b*) Fixed interest rate charged on materials inventory, including raw materials, those in process of manufacture, and finished goods. These rates would probably be the normal rates at which a safe return could be figured on the same money placed in other investments.

(*c*) A definite rate of depreciation on both buildings and equipment. The Bureau of Internal Revenue, in its published pamphlet on depreciation studies, gives the rate for structures at from 2½ to 4 per cent, or a probable useful life of from 25 to 40 years, depending on the type. For the building equipment, prevailing rates are from 3⅓ to 7 per cent, depending largely on the type of fixtures. Office equipment rates run from 5 to 20 per cent. For circular knitting machines, the bureau recommends 7½ per cent, or an average life of 13 years, and for flat machines 6 per cent, or a life of 17 years. These figures are no doubt possible and probable as to life of the equipment. However, when the age of a machine is considered in general practice, the modern plant does not keep its equipment this long, especially if new improvements are coming out all the time in the industry, as the useful life a machine in the latter case is based on its cost and production ability, and if a machine is used steadily more than the average operating time of 10 hours per day, it stands to reason that its life will not be as long as when used for only a normal period of working time. These latter factors should be taken into consideration in arriving at suitable depreciation rates for plant and equipment.

(*d*) A definite rate for charging mechanical and style obsolescence. This item has been set up in very few accounts to date, but is considered highly important by engineers and accountants. As previously stated, a committee within the industry might be formed to use the figures available and the information that can be furnished by the machinery manufacturers to arrive at representative rates for both mechanical and style obsolescence. Although the first rates set up may not be perfectly satisfactory, they can be revised from time to time as new data come to light. In setting up these rates the industry should consider as of importance the following factors: (1) Production per unit and per worker of new equipment versus present machines; (2) adaptability and range both for style and staple articles; (3) number of machines which can be tended by one operator compared with present equipment; (4) savings, if any, effected by change; (5) average life of machine and likelihood of its being superseded by new equipment shortly; (6) time required for setting up work compared to present equipment.

(*e*) A consideration of wastage and the factors applicable to allow for losses in manufacturing. By a careful check of the industry sufficient information should be forthcoming definitely to work up theoretical rates for the guidance of members in estimating wastage. From the information submitted there is no doubt that this item should be carefully considered when figuring manufacturing costs.

2. *Definite equipment policy.*—This should cover: (*a*) Depreciation rates, (*b*) obsolescence rates, style and mechanical, (*c*) disposal of obsolete machinery, and (*d*) the secondhand machine.

An equipment policy is a vital matter and one that undoubtedly reaches the heart of the industry. As stated in the earlier pages of this publication, scrapping of old equipment would no doubt better the industry and place it on a healthier basis. Many manufacturers feel the machinery manufacturers could help in this respect and their argument is as follows:

> Each machinery manufacturer could allow a price for this equipment dependent on whether the machine was in good usable condition or junk, with the age of machine taken into consideration on somewhat the same plan as the automobile manufacturer does. If the machine taken in trade was good and could be fixed at a reasonable cost and possibly modernized, the manufacturer could dispose of it again at a fair price to some plant where a reconditioned machine might prove equally as valuable as new equipment. Furthermore, he would be able to guide sales with the possibility of maintaining the business on a more permanent basis by limiting rebuilt machine sales to cash transactions, or on credit only when properly financed. Machines that are worthless would be scrapped.

The idea is good and might be worked out. On the other hand, it would mean that the machinery manufacturer might have to tie up considerable money in buying back secondhand equipment and reconditioning it for resale. Besides, there is the time a machine might have to be held in stock pending a sale and thus incur interest on the investment. All of these things suggest that it might be necessary for the manufacturer to charge more for new equipment to cover the costs involved in transporting, reconditioning, storing, and reselling used equipment. Would the industry actually gain more by an arrangement of this kind, or would it be better to scrap the machines and carry their book value into the cost of the new equipment? Probably both sides can find good arguments for their points of view, but certainly the industry needs to adopt some definite and better policy in this connection and hold to it.

APPENDIX

This appendix contains tables showing some of the more important relationships between the different items. This applies especially to the comparisons between the New York, Philadelphia, and Cleveland areas. In a publication of this size it was possible to use only a few of the numerous combinations possible from the census cards. The tabulations used were those considered most important to the trade in bringing out the facts developed from this and the two previous surveys. Should the industry desire further tabulations, this bureau will be glad to do what it can in compiling them.

The first series of tables deals with data obtained in the New York area. The second group gives comparative figures for the three areas.

CIRCULAR MACHINES

Number of Circular Machines According to Diameters

Diameter in inches	Number	Diameter in inches	Number	Diameter in inches	Number
Hose	6	11	10	22	16
Up to 1	11	11¾ to 12	25	23	10
1¼ to 2	8	13	20	24	26
2¼ to 3	15	14	35	25	3
3¼ to 4	37	15	24	26	20
4¼ to 5	26	16	207	28	7
5½ to 6	5	17	45	30	53
7	23	18	91	32	8
8	6	19	38	36	4
9	9	20	56		
10	9	21	26	Total	879

Circular Machines of Different Diameters Classified According to Number of Feeds

Diameter in inches	Machines	Number of feeds																	
		Not given	1	2	3	4	6	7	8	9	10	11	12	14	16	20	24	30	Interchange
Hose	6	6																	
Up to 1	11		11																
1¼ to 2	8	5	2			1													
2¼ to 3	15		6	4		5													
3¼ to 4	37	2	25	8		2													
4¼ to 5	26		13	11	1	1													
5½ to 6	5		1	4															
7	23			23															
8	6	1	2	2		1													
9	9			1		8													
10	9		2			6	1												
11	10	1		3	1	4	1												
11¾ to 12	25	1		4		5	3		12										
13	20	1		8		4	6		1										
14	35	1		19	1	3	4	1	3					3					
15	24	2	1	10		1	2		7					1					
16	207	18	1	8		9	7		68						63				33
17	45	2		4		4	10		25										
18	91	3		10	2	12	7		45	2		1	3						6
19	38	6		2		5	8		13						4				
20	56	1			2	2	9		25		3	1	13						
21	26	2				4	6		9				5						
22	16					2	2		11			1							
23	10	1				1	2		2				4						
24	26	4					3		12								7		
25	3								1										2
26	20	4				1	6		2						3	4			
28	7						3		4										
30	53					1	27		19				2			3		1	
32	8						5		3										
36	4					3											1		
Total	879	56	61	129	7	85	112	1	262	2	3	3	27	4	70	7	8	1	41

Circular Machines of Different Diameters Classified According to Number of Striper Changes

Diameter in inches	Machines	Number of striper changes								
		Not given	None	Interchange	1	2	3	4	6	8
Hose	6	6								
Up to 1	11		11							
¼ to 2	8		8							
2¼ to 3	15		10					5		
3¼ to 4	37	2	31					4		
4¼ to 5	26	2	12		1	9	2			
5½ to 6	5		2			3				
7	23		22			1				
8	6	1	3			2				
9	9		4			5				
10	9		2			6	1			
11	11	1	2			6	1			
11¾ to 12	25	1	17			5	2			
13	20		12		3	3	1	1		
14	35	1	12		1	16	2	3		
15	24	2	12		1	6	1	2		
16	207	4	110	18	2	8	2	63		
17	45	2	19		1	3	3	16		1
18	91	3	36	6	1	8	3	18		16
19	38	5	13			3	4	8		5
20	56	1	36			3	2	3		11
21	26	2	11		1	4	2	4		2
22	16		6			2	1	1		6
23	10	1	5			1		1		2
24	26	4	8			2			1	11
25	3			2						1
26	20	4	4			2		2	1	7
28	7	1	1			1				4
30	53		27	3	1	8		8	4	2
32	8		6					2		
36	4							3		1
Total	879	43	442	29	12	107	27	144	6	69

Circular Machines Classified According to Number of Needles Per Inch and Gage

Needles per inch	Number	Needles per inch	Number	Needles per inch	Number
Hose	6	14	7	50	2
4	2	15	5	58	1
5	4	16	41	6 gage	16
6	5	17	7	7 gage	9
6½	5	18	19	8 gage	18
7	47	20	5	9 gage	4
7½	3	20⅘	4	10 gage	1
8	89	22	1	12 gage	1
8½	25	24	11	14 gage	6
9	34	27	2	16 gage	1
9⅗	1	28	33	18 gage	3
10	98	30	2	24 gage	64
10½	1	32	2	36 gage	21
11	71	36	1	42 gage	5
12	109	40	2	Not given	50
13	28	42	7		
				Total	879

CIRCULAR MACHINES OF DIFFERENT DIAMETERS CLASSIFIED ACCORDING TO STYLE

Diameter in inches	Machines	Style		Diameter in inches	Machines	Style		Diameter in inches	Machines	Style	
		Plain	Jacquard			Plain	Jacquard			Plain	Jacquard
Hose	6	6	------	3¾	7	7	------	17	45	30	15
⅛	2	2	------	4	11	9	2	18	91	77	14
½	3	3	------	4¼	6	6	------	19	38	33	5
⅝	2	2	------	4½	3	3	------	20	57	52	5
¾	2	2	------	4¾	4	3	1	21	26	18	8
⅞	1	1	------	5	13	13	------	22	16	13	3
1	1	1	------	6	5	5	------	23	10	9	1
1¼	4	4	------	7	23	23	------	24	26	21	5
1½	1	1	------	8	6	6	------	25	3	2	1
1¾	1	1	------	9	9	9	------	26	20	17	3
2	2	2	------	10	9	9	------	28	7	6	1
2¼	2	2	------	11	10	10	------	30	53	23	30
2½	2	1	1	12	25	23	2	32	8	2	6
2¾	3	1	2	13	20	17	3	36	4	1	3
3	8	7	1	14	35	28	7				
3¼	9	8	1	15	24	17	7	Total	879	712	167
3½	10	9	1	16	206	167	39				

CIRCULAR MACHINES CLASSIFIED ACCORDING TO TYPE OF PRODUCT

Products	Number	Products	Number
Bathing suits, sweaters, etc	170	Sweaters, coats, and pullovers	14
Childrens' wear	9	Sweaters	64
Hose	44	Sport suits and coats	34
Jersey cloth	78	Suits	31
Knitted fabrics	4	Theatrical goods	7
Mufflers	18	Sportwear	153
Rayon fabrics	36	Trimmings	93
Ribbed cloth and sweaters	29	Not given	21
Pullovers and suits	46		
Suits, sweaters (ladies')	22	Total	879
Suits, sweaters, and dresses	6		

CIRCULAR MACHINES CLASSIFIED ACCORDING TO MAKE OF MACHINE

Make of machine	Number	Make of machine	Number
Make A	290	Make E	137
Make B	84	Other	182
Make C	167		
Make D	19	Total	879

CIRCULAR MACHINES CLASSIFIED ACCORDING TO PER CENT OF NORMAL WORKING TIME OPERATED

Per cent of time operated	Number	Per cent of time operated	Number	Per cent of time operated	Number
2	4	37½	4	70	33
7	15	40	28	75	44
10	71	42½	6	77½	1
12½	9	45	20	80	87
15	2	47½	4	82½	2
17½	2	50	94	85	72
20	19	52½	3	90	7
22½	1	55	23	100	17
25	32	57½	13	Not given	80
27½	4	60	40	Not operating	65
30	35	65	12		
32½	3	67½	2	Total	879
35	25				

CIRCULAR MACHINES CLASSIFIED ACCORDING TO YEAR PURCHASED

Year purchased	Number	Year purchased	Number	Year purchased	Number
1905	8	1917	14	1926	13
1908	2	1918	30	1927	114
1910	2	1919	49	1928	74
1911	1	1920	60	1929	60
1912	8	1921	12	1930	26
1913	1	1922	56	1931	3
1914	2	1923	69	Unknown	169
1915	4	1924	45		
1916	1	1925	56	Total	879

CIRCULAR MACHINES OF DIFFERENT DIAMETERS USED EXCLUSIVELY FOR TRIMMING AND BORDERING

Diameter in inches	Number	Diameter in inches	Number	Diameter in inches	Number
⅛	2	2¾	1	8	3
½	3	3	7	12	3
⅝	2	3¼	5	13	3
¾	2	3½	1	14	7
⅞	1	3⅝	1	15	6
1	1	4	7	16	6
1¼	3	4¼	6	18	1
1½	1	4½	1	20	4
1¾	1	4¾	1	30	1
2	2	5	3		
2¼	2	7	4	Total	92
2½	1				

FLAT MACHINES

NUMBER OF FLAT MACHINES ACCORDING TO SIZE

Width in inches	Power	Hand	Width in inches	Power	Hand	Width in inches	Power	Hand
Border	1	------	23	1	------	38	3	------
4½	1	------	23¾	4	------	39	2	------
6	2	------	24	55	68	39½	17	------
6½	1	------	25	------	1	40	79	1
6½	3	------	25½	10	------	42	7	------
8	2	7	26	23	23	43½	1	------
8¼	1	------	27	1	------	44	100	14
9	1	3	27½	1	8	46	6	------
10	4	32	28	43	20	48	32	------
11	1	------	29	------	1	50	1	------
12	7	------	30	12	1	52	6	------
13	2	------	31	1	2	56	15	------
14	18	------	31½	1	5	58	2	------
15	2	3	32	39	26	60	8	------
16	7	12	32½	1	------	64	2	------
18	23	133	33½	1	------	68	2	------
19	1	------	34	11	1	Not given	------	12
20	33	47	35½	3	------			
21	------	1	36	30	6	Total	645	429
22	15	2						

Flat Machines Classified According to Yarn Changes

Size	Power											Hand						
	Not given	None	1	2	3	4	5	6	7	8	2-28	2	Not given	3	4	None	6	5
Border				1														
4½		1																
6		2																
6½				1														
6½ do				3														
8			1	1								1	6					
8¼ do				1														
9			1									3						
10		2	2										1		31			
11			1															
12		1	4	1	1													
13				2														
14		5	3	7	3													
15				1		1						3						
16		1	1	4		1						3	8		1			
18	1	2	2	8	1	8					1	7	42		84			
19				1														
20	18			2	7	5		1				5	12		30			
21												1						
22		2	3	3	7							2						
23					1													
23¾	1				3													
24	4	2	1	13	18	17						43	7	6	12			
25															1			
25½						10												
26	1				9	13						14		3	6			
27	1																	
27½					1									8				
28				5	12	25				1		3	5	10	2			
29													1					
30	1		1	2	6	2									1			
31					1										2			
31½					1									1	2		2	
32	1		4	2	14	17				1		2	1	21	2			
32½					1													
33½				1														
34			3		6	2										1		
35½				1	1	1												
36	2			1	6	21						1		3	2			
38					2	1												
39						2												
39½					12	5												
40	4				11	62			2						1			
42						7												
43½						1												
44	6				15	78	1					1			3			10
46						6												
48					4	27			1									
50						1												
52						6												
56						14			1									
58			1			1												
60						8												
64				2														
68			2															
Not given													12					
Total	40	18	30	63	143	342	1	1	4	2	1	89	95	52	180	1	2	10

Flat Machines of Different Widths Classified According to Needles Per Inch

Needles per inch	Power	Hand	Needles per inch	Power	Hand	Needles per inch	Power	Hand
2	5	4	9	6		6 gage	11	
2½	26	4	10	27	15	6½ gage		1
3		1	12	11	5	7 gage	27	61
4	6		13	6		8 gage	4	110
5	24	5	16		4	Not given	22	
6	2	14	18	34	205	Total	645	429
7	286		20	1				
8	145		5 gage	2				

Flat Machines Classified According to Products Manufactured

Products	Power	Hand	Products	Power	Hand
Childrens' wear	44	11	Ribbed cloth	15	
Coats and sweaters	31		Shaker sweaters	8	
Dresses, neckwear, and suits	6	72	Suits and sweaters	24	22
Golf hose, suits, and sweaters		8	Sweaters and trimmings		8
Golf hose, sweaters		5	Sweaters and hose		3
Golf hose		1	Sweaters	213	28
Hose, baseball and football	5	10	Suits	53	60
Jerseys	3		Trimming and bordering	98	12
Ladies' knitted outerwear	25	17	Not given	92	73
Mufflers, neckwear, and suits	16	59	Total	645	429
Neckwear and suits	12	40			

Flat Machines, Hand and Power, Classified According to Make of Machine

Make of machine	Hand	Power	Make of machine	Hand	Power
Make A	183	123	Other makes	61	220
Make B	2	26	Total	429	645
Make C	85	87			
Make D	98	189			

Flat Machines Classified According to Dates of Purchases

Date of purchase	Power	Hand	Date of purchase	Power	Hand	Date of purchase	Power	Hand
1906	3		1918	12	14	1927	80	3
1908	5		1919	3		1928	18	40
1910	5		1920	38	6	1929	46	
1912	15	1	1921	5	38	1930	6	3
1913	35		1922	9	28	1931	4	4
1914		2	1923	64	24	Unknown	34	5
1915	3	70	1924	30	15	Not given	162	91
1916	3	3	1925	16	15	Total	645	429
1917	24	67	1926	25				

Flat Machines Classified According to Percentage of Time Operated

Per cent of time operated	Power	Hand	Per cent of time operated	Power	Hand	Per cent of time operated	Power	Hand
½ of 1	5	2	35	17	28	70	44	15
1		4	37½	1		72½	1	
2		1	40	2	9	75	45	4
5	5		42½	3	6	80	21	14
5½	3		45	2	9	85	6	3
7½	11		47½	1	2	87½		1
10	10		50	39	20	90	2	3
12½	3	1	52½	6	25	95	3	
15	7	1	55	6		100	105	
18½		59	57½	26		Not given	137	68
20	12	19	60	21	33	Not operated	51	77
22½	1		62½		6	Total	645	429
25	27		63	2				
30	14	15	65	3	1			
32½		3	67½	3				

Flat Machines Used Exclusively for Trimming and Bordering

Size	Hand	Power	Size	Hand	Power	Size	Hand	Power
Border		1	14		18	28	1	3
4½		1	15		1	32		2
6		2	16	4	7	33½		1
6½		1	18	1	9	35½		1
8		2	20	1	6	36		2
8¼ do		1	22	1	5	40		5
9		1	23		1	44		3
10		3	24		13	48		1
11		1	26	3	3			
12		3	27		1	Total	11	98

LINKS-AND-LINKS MACHINES

Links-and-Links Machines Classified According to Size

Width in inches	Hand	Power	Width in inches	Hand	Power	Width in inches	Hand	Power
18	1		42	2		56		5
28	1		43		1	58		8
31½	1		44	3	35	60		13
33½	1		45	1				
36	1		48		14	Total	43	90
38	3		52		7			
40	2	6	54		1			

Links-and-Links Machines, Hand Operated, Classified According to Number of Yarn Changes

Width in inches	Machines	Number of yarn changes						
		0	1	2	3	4	5	Not given
18	1			1				
28	1			1				
31½	1			1				
33½	1			1				
36	1			1				
38	3			3				
40	2			1				1
42	2					2		
44	30	5		2	14	8	1	
45	1					1		
Total	43	5		11	14	11	1	1

Links-and-Links Machines, Power Operated, Classified According to Yarn Changes

Width in inches	Machines	Yarn changes						
		2	3	4	5	6	12	None
40	6		4	2				
43	1							1
44	35	5	14	5	1	10		
48	14		1	2	10		1	
52	7		1	5		1		
54	1			1				
56	5		2	3				
58	8			8				
60	13			13				
Total	90	5	21	40	11	11	1	1

Links-and-Links Machines, Power Operated, Classified According to Number of Needles Per Inch

Needles per inch	Number	Needles per inch	Number
5	20	10	1
6	45	13	1
7	8	6 gage	8
8	1		
9	6	Total	90

Links-and-Links Machines, Hand Operated, Classified According to Number of Needles Per Inch

Needles per inch	Number	Needles per inch	Number
5	2	12	1
6	26	13	1
7	1	6 gage	3
8	5		
9	3	Total	43
10	1		

Links-and-Links Machines, Power Operated, Classified According to Products Manufactured

Type of product	Number	Type of product	Number
Sweaters, pullover	15	Children's wear	8
Sweaters	25	Not given	10
Coats, pullovers, and sets	14		
Infants' wear	17	Total	90
Sweaters, men's	1		

Links-and-Links Machines, Hand Operated, Classified According to Products

Type of product	Number	Type of product	Number
Sweaters, slip-on	2	Pullovers, coats, etc. (used for making samples)	1
Sweaters, infants	1	Sweaters	7
Sweaters and coats	1	Sweaters and hose	1
Sweaters, men's	2	Not given	1
Sweaters, men's, and suits	1	Miscellaneous infants' wear	7
Ladies suits and sweaters	5	Miscellaneous children's wear	5
Children's wear	15		
Pullovers	6	Total	43

Links-and-Links Machines Classified According to Make of Machine

Make	Hand	Power
Make A	30	19
Make B	3	20
Make C	0	5
Other makes	10	46
Total	43	90

LINKS-AND-LINKS MACHINES, HAND OPERATED, CLASSIFIED ACCORDING TO PER CENT OF NORMAL WORKING TIME OPERATED

Per cent of time operated	Number	Per cent of time operated	Number
5	2	50	2
8	3	75	6
10	3	100	7
20	1	Not given	1
30	2	Not operated	2
32½	1	Total	43
35	1		
45	12		

LINKS-AND-LINKS MACHINES, POWER OPERATED, CLASSIFIED ACCORDING TO PER CENT OF WORKING TIME OPERATED

Per cent of time operated	Number	Per cent of time operated	Number
55	17	95	5
66	11	100	28
75	1	Not given	10
80	3	Not operated	4
87½	5		
90	6	Total	90

LINKS-AND-LINKS MACHINES, POWER OPERATED, CLASSIFIED ACCORDING TO DATE OF PURCHASE

Date of purchase	Number	Date of purchase	Number
1913	9	1927	1
1919	8	1929	1
1921	16	Not given	41
1925	9		
1926	5	Total	90

RASCHEL MACHINES

RASCHEL MACHINES, CLASSIFIED

[Number of machines, 41]

Size:		Products manufactured:	
89	20	Knitted sportwear	6
90	15	Raschel cloth	35
95	6	Percentage of time worked:	
Needles per inch:		35	20
13	25	30	6
24 gage	10	50	10
Not given	6	Not in use	5
Make of machine:		Year purchased:	
Make A	15	1920	10
Make B	4	1923	18
Make C	6	1924	8
Not given	16	Not given	5

CROCHET MACHINES

CROCHET MACHINES, CLASSIFIED

[Number of machines, 6]

Size:		Percentage of time worked:	
16 sections	2	20	2
18 sections	1	40	1
24 sections	3	42½	1
Needles per inch:		30	1
27 gage	2	37½	1
33 gage	3	Year purchased:	
36 gage	1	1915	2
Make of machine:		1918	3
Make A	3	1920	1
Make B	2		
Make C	1		

PHILADELPHIA, CLEVELAND, AND NEW YORK MACHINES COMPARED

CIRCULAR MACHINES IN PHILADELPHIA, CLEVELAND, AND NEW YORK, CLASSIFIED ACCORDING TO SIZE

Philadelphia		Cleveland		New York	
Diameter in inches	Number	Diameter in inches	Number	Diameter in inches	Number
Up to 1	21	Up to 1	9	Up to 1	11
1½ to 2	47	1¼ to 2	31	1¼ to 2	8
2⅛ to 3	98	2¼ to 3	21	2¼ to 3	15
3¼ to 4	52	3¼ to 4	75	3¼ to 4	37
4¼ to 5	56	4¼ to 5	46	4¼ to 5	26
5¼ to 6	22	5¼ to 6	136	5½ to 6	5
6¼ to 7	10	6½ to 7	227	7	23
7¼ to 8	10	7½ to 8	35	8	6
8¼ to 9	14	8¼ to 9	63	9	9
9¼ to 10	31	9¼ to 10	65	10	9
10¼ to 11	16	10½ to 11	52	11	10
11¼ to 12	42	11¼ to 12	102	11¾ to 12	25
13	27	12¾ to 13	54	13	20
14	62	13½ to 14	51	14	35
15	38	15	36	15	24
16	96	16	66	16	207
17	37	17	37	17	45
18	86	18	86	18	91
19	58	19	24	19	38
20	68	20	91	20	56
21	47	21	13	21	26
22	30	22	34	22	16
23	16	23	1	23	10
24	13	24	15	24	26
				25	3
26	2	26	12	26	20
28	21			28	7
30	81	30	25	30	53
32	1			32	8
36	2	35	18	36	4
Unknown	49	Unknown	5	Hose	6
Total	1,153	Total	1,430	Total	879

STRIPER AND YARN CHANGES OF PHILADELPHIA, CLEVELAND, AND NEW YORK CIRCULAR AND FLAT MACHINES

Number of striper changes	Circular machines			Number of yarn changes	Flat machines		
	Philadelphia	Cleveland	New York		Philadelphia	Cleveland	New York
None	589	576	442	None	112	148	19
1	36	438	12	1	30	83	30
2	160	290	107	2	58	55	152
2 or 3	15			2 or 3		12	
2 or 4	16			3	52	35	190
3	55	110	27	4	25		527
4	107	8	144	5	8		11
5	12			6			3
6	6		6	7			4
7		7		8			2
8	49		69	2-28			1
9		1					
16	2						
Unknown	106		43				
Interchange			29				
Total	1,153	1,430	879	Total	451	353	1,062

FEEDS OF PHILADELPHIA, CLEVELAND, AND NEW YORK CIRCULAR MACHINES

Feeds	Number		
	Philadelphia	Cleveland	New York
1	68	16	65
1 or 2	24		
2	335	813	125
3	3	20	7
4	129	349	85
4 or 6	4	7	
4 or 8	14		
5		3	
6	202	82	112
6 or 8	24		
7			1
8	206	97	262
8 or 12	49		
9			2
10	1		3
11			3
12	8	19	27
14		6	4
16		6	70
20	2	4	7
24			8
30			1
Unknown	84	2	56
Interchangeable			41
Total	1,153	1,430	879

CIRCULAR MACHINES IN PHILADELPHIA, CLEVELAND, AND NEW YORK, CLASSIFIED ACCORDING TO NEEDLES PER INCH

Philadelphia		Cleveland		New York	
Needles per inch	Number	Needles per inch	Number	Needles per inch	Number
	4	1	1	Hose	6
2½ to 2⅞	63	2 to 2½	11		
3 to 3¾	26	3 to 3½	46		
		4 to 4½	270	4	2
5 to 5¾	20	5 to 5½	283	5	4
6 to 7⅞	30	6 to 6½	268	6 to 6½	26
7 to 7¾	198	7 to 7½	165	7 to 7½	59
7 or 8	70	8	61	8 to 8½	137
8 to 8½	252	9	114	9 to 9⅗	39
9 to 9¼	43	10	58	10 to 10½	100
10 to 10¾	113	11	47	11	71
11 to 11½	9	12	50	12	110
12	90	13 to 13½	31	13	28
13	24	14	7	14	8
14		15	8	15	5
15		16	10	16	42
16	37			17	7
17				18	22
18				20 to 20⅖	9
Unknown	178			22	1
				24	75
				27	2
				28	33
				30	2
				32	2
				36	22
				40	2
				42	12
				50	2
				58	1
				Not given	50
Total	1,153	Total	1,430	Total	879

FLAT MACHINES IN PHILADELPHIA, CLEVELAND, AND NEW YORK, CLASSIFIED ACCORDING TO NEEDLES PER INCH

Philadelphia		Cleveland		New York	
Needles per inch	Number	Needles per inch	Number	Needles per inch	Number
2½ to 3	165	2½ to 3	88	2	9
4½ to 5	17	4	8	2½ to 3	31
6	9	5	78	4	6
6 or 8	13	5½ to 6	54	5	31
6½ to 7	53	7	63	6	27
8	29	8	48	6½ to 7	375
10	23	9	1	8	259
12	14	10	5	9	6
14	1	12	7	10	42
18	9	Unknown	1	12	16
Unknown	118			13	6
				16	4
				18	239
				20	1
				Not given	22
Total	451	Total	353	Total	1,074

MAKES OF PHILADELPHIA, CLEVELAND, AND NEW YORK MACHINES

Circular			
	Philadelphia	Cleveland	New York
Make A	111	450	290
Make B	241	133	84
Make C	206	330	167
Make D	0	419	19
Make E	380	47	137
Other	190	50	182
Unknown	25	1	000
Total	1,153	1,430	879

Flat			
	Philadelphia	Cleveland	New York
Make A	202	167	306
Make B	69	106	28
Make C	18	36	172
Make D	24	13	287
Other	32	27	281
Unknown	92	4	000
Total	437	353	1,074

Raschel			
	Philadelphia	Cleveland	New York
Make A	0	110	15
Make B	0	34	4
Make C	0	78	6
Make D	4	17	0
Other	0	26	16
Unknown	10	1	0
Total	14	266	41

Kettenstuhl			
	Philadelphia	Cleveland	New York
Make A	0	8	0
Make B	0	4	0
Other	0	3	0
Total	0	15	0

Links and links			
	Philadelphia	Cleveland	New York
Make A	0	0	49
Make B	0	0	23
Make C	0	0	5
Other	0	0	56
Total	0	0	133

Crochet			
	Philadelphia	Cleveland	New York
Make A	0	0	2
Make B	0	0	3
Make C	0	0	1
Total	0	0	6

PRODUCTS OF PHILADELPHIA, CLEVELAND, AND NEW YORK CIRCULAR AND FLAT MACHINES

CIRCULAR

Philadelphia	Number	Cleveland	Number	New York	Number
Bathing suits	49	Sweaters	441	Bathing suits, sweaters	170
Bathing suits, trimmings	6	Caps and scarfs	131	Children's wear	9
Boy's suits, sport coats	8	Hockey caps	147	Hose	44
Cloth	80	Gloves and sweaters	26	Jersey cloth	78
Golf hose	1	Sweaters and trimmings	264	Knitted fabrics	4
Women's wear	2	Trimmings	170	Mufflers	18
Men's scarfs	4	Sweaters and bathing suits	20	Rayon fabrics	36
Ribbed Childrens' wear	12	Sweaters, jackets, and caps	23	Ribbed cloth and sweaters	29
Shaker sweaters	34	Sleeves	92	Pullovers and suits	46
Sport coats, sweaters	8	Ladies suits and sweaters	9	Suits, sweaters (ladies)	22
Sport coats, sweaters, bathing suits	10	Astrakan sweaters	24	Suits, sweaters, and dresses	6
Sweaters	279	Hockey caps and sleeves	20	Sweaters, coats, and pullovers	14
Sweaters, bathing suits	262	Sport coats	9	Sweaters	64
Sweaters, cloth	2	Bathing suits, sport coats	6	Sport suits and coats	34
Sweaters, hose	58	Mittens	30	Suits	31
Sweaters, women's suits	12	Miscellaneous	18	Theatrical goods	7
Trimmings	253			Sportwear	153
Unknown	73			Trimmings	93
				Not given	21
Total	1,153	Total	1,430	Total	879

FLAT

Philadelphia	Number	Cleveland	Number	New York	Number
Trimmings	89	Trimmings	212	Childrens' wear	55
Shaker sweaters	120	Sweaters	120	Coats and sweaters	31
Shaker sweaters, trimming	16	Caps	12	Dresses, neckwear, suits	78
Sweaters, women's suits	2	Sleeves	5	Golf hose, suits, sweaters	8
Sweaters, hose	14	Sweaters and caps	4	Golf hose, sweaters	5
Sweaters	63			Golf hose	1
Sweaters, trimmings	14			Hose, baseball and football	15
Sweaters, bathing suits	10			Jerseys	3
Sport coats	1			Ladies knitted outerwear	42
Women's wear	13			Mufflers, neckwear, suits	75
Unknown	109			Neckwear, suits	52
				Ribbed cloth	15
				Shaker sweaters	8
				Suits and sweaters	46
				Sweaters and trimmings	8
				Sweaters, hose	3
				Sweaters	241
				Suits	113
				Trimming and bordering	110
				Not given	165
Total	451	Total	353	Total	1,074

PER CENT OF NORMAL WORKING TIME OPERATED BY PHILADELPHIA, CLEVELAND, AND NEW YORK MACHINES IN RECENT YEARS

Philadelphia			Cleveland					New York				
Per cent time in use, July-December, 1928	Circular	Flat	Per cent time in use, 1929	Circular	Flat	Raschel	Kittenstuhl	Per cent time in use, 1930	Circular	Flat	Raschel	Links and links
0	49	13	0	124	37	6	7	½-10	90	41	----	8
5	3	2	1-10	35	10	----	----	11-20	32	102	----	1
10	8	3	11-20	94	11	----	----	21-30	72	57	6	2
20	5	----	21-30	155	19	1	----	31-40	60	60	20	2
25	41	19	31-40	183	27	15	----	41-50	124	82	10	14
33⅓	----	2	41-50	224	34	14	----	51-60	79	117	----	17
40	3	----	51-60	56	18	73	----	61-70	47	74	12	11
50	307	75	61-70	94	18	----	----	71-80	132	85	----	10
60	----	5	71-80	269	89	53	----	81-90	81	15	----	11
75	92	54	81-90	60	5	46	8	90-100	17	108	----	40
80	65	8	91-100	82	53	58	----	Not given	80	205	----	11
90	4	12	120	35	----	----	----	Not operated	65	128	5	6
95	2	13	Purchased since 1929	19	----	----	----					
100	217	66	Unknown	----	32	----	----					
125	9	----										
150	----	13										
Unknown	348	166										
Total	1,153	451	Total	1,430	353	266	15	Total	879	1,074	53	133

Products of Philadelphia, Cleveland, and New York Circular and Flat Machines

CIRCULAR

Philadelphia	Number	Cleveland	Number	New York	Number
Bathing suits	49	Sweaters	441	Bathing suits, sweaters	170
Bathing suits, trimmings	6	Caps and scarfs	131	Children's wear	9
Boy's suits, sport coats	8	Hockey caps	147	Hose	44
Cloth	80	Gloves and sweaters	26	Jersey cloth	78
Golf hose	1	Sweaters and trimmings	264	Knitted fabrics	4
Women's wear	2	Trimmings	170	Mufflers	18
Men's scarfs	4	Sweaters and bathing suits	20	Rayon fabrics	36
Ribbed Childrens' wear	12	Sweaters, jackets, and caps	23	Ribbed cloth and sweaters	29
Shaker sweaters	34	Sleeves	92	Pullovers and suits	46
Sport coats, sweaters	8	Ladies suits and sweaters	9	Suits, sweaters (ladies)	22
Sport coats, sweaters, bathing suits	10	Astrakan sweaters	24	Suits, sweaters, and dresses	6
Sweaters	279	Hockey caps and sleeves	20	Sweaters, coats, and pullovers	14
Sweaters, bathing suits	262	Sport coats	9	Sweaters	64
Sweaters, cloth	2	Bathing suits, sport coats	6	Sport suits and coats	34
Sweaters, hose	58	Mittens	30	Suits	31
Sweaters, women's suits	12	Miscellaneous	18	Theatrical goods	7
Trimmings	253			Sportwear	153
Unknown	73			Trimmings	93
				Not given	21
Total	1,153	Total	1,430	Total	879

FLAT

Philadelphia	Number	Cleveland	Number	New York	Number
Trimmings	89	Trimmings	212	Childrens' wear	55
Shaker sweaters	120	Sweaters	120	Coats and sweaters	31
Shaker sweaters, trimming	16	Caps	12	Dresses, neckwear, suits	78
Sweaters, women's suits	2	Sleeves	5	Golf hose, suits, sweaters	8
Sweaters, hose	14	Sweaters and caps	4	Golf hose, sweaters	5
Sweaters	63			Golf hose	1
Sweaters, trimmings	14			Hose, baseball and football	15
Sweaters, bathing suits	10			Jerseys	3
Sport coats	1			Ladies knitted outerwear	42
Women's wear	13			Mufflers, neckwear, suits	75
Unknown	109			Neckwear, suits	52
				Ribbed cloth	15
				Shaker sweaters	8
				Suits and sweaters	46
				Sweaters and trimmings	8
				Sweaters, hose	3
				Sweaters	241
				Suits	113
				Trimming and bordering	110
				Not given	165
Total	451	Total	353	Total	1,074

Per Cent of Normal Working Time Operated by Philadelphia, Cleveland, and New York Machines in Recent Years

Philadelphia			Cleveland					New York				
Per cent time in use, July-December, 1928	Circular	Flat	Per cent time in use, 1929	Circular	Flat	Raschel	Kittenstuhl	Per cent time in use, 1930	Circular	Flat	Raschel	Links and links
0	49	13	0	124	37	6	7	½-10	90	41	------	8
5	3	2	1-10	35	10	------	------	11-20	32	102	------	1
10	8	3	11-20	94	11	------	------	21-30	72	57	6	2
20	5	------	21-30	155	19	1	------	31-40	60	60	20	2
25	41	19	31-40	183	27	15	------	41-50	124	82	10	14
33⅓	------	2	41-50	224	34	14	------	51-60	79	117	------	17
40	3	------	51-60	56	18	73	------	61-70	47	74	12	11
50	307	75	61-70	94	18	------	------	71-80	132	85	------	10
60	------	5	71-80	269	89	53	------	81-90	81	15	------	11
75	92	54	81-90	60	5	46	8	90-100	17	108	------	40
80	65	8	91-100	82	53	58	------	Not given	80	205	------	11
90	4	12	120	35	------	------	------	Not operated	65	128	5	6
95	2	13	Purchased since 1929	19	------	------	------					
100	217	66	Unknown	------	32	------	------					
125	9	------										
150	------	13										
Unknown	348	166										
Total	1,153	451	Total	1,430	353	266	15	Total	879	1,074	53	133

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